

### **REMARKS**

This Amendment is filed in response to the Office Action dated January 12, 2005. Applicant has amended independent Claim 1. Applicant respectfully submits that the claims, as amended, are patentable over the cited references. Applicant therefore request reconsideration and allowance of the claims in light of the following remarks.

#### **I. Request for Telephone Interview**

Applicant respectfully requests a telephone interview between the Examiner and Applicant's counsel following Examiner's review of this Amendment. Applicant's counsel can be contacted either by phone (704-444-1017) or email ([kransom@alston.com](mailto:kransom@alston.com)) to schedule the interview.

#### **II. The Claims Are Patentable**

The Office Action rejects the claims as obvious in light of the combination of U.S. Patent No. 5,623,355 to Olsen and U.S. Patent No. 6,522,436 to Roberts. The Office Action continues to allege that the '355 Olsen patent discloses all aspects of independent Claim 1, except for encoding different values in more than two power levels. The Office Action argues that this limitation is met by the discussion of duobinary modulation in the '436 Roberts patent. Applicant respectfully disagrees with these rejections.

As best understood, the Office Action contends that because the '355 Olsen system discloses transmitting a zero "0" bit at one power and a one "1" bit at another power, this is modulation of different values into different power levels. The '355 Olsen patent describes a binary transmission system for use over long distances. In this, two states in the laser drive are used to overcome the switch on delays of the laser. One state of the laser represents binary level 0 and the other represents binary level 1. When a binary word is converted for transmission every binary bit is converted to a corresponding laser output signal, i.e. for word 1101, the laser would output four pulses, each one corresponding to one bit (the level depending on whether the bit is 0 or 1). Specifically, at time  $t_0$ , the system would transmit a first signal at power level high, at time  $t_1$ , the system would transmit a second signal at power level high, at time  $t_2$ , the system would transmit a third signal at power level low, and at time  $t_3$ , the system would transmit a

fourth signal at power level high. The system of the '355 Olsen patent is not directed to the problem of how to increase data transfer rates. It does not cover multi-state transmission systems having more than two different power levels.

In contrast, the claimed invention is directed to the problem of how to maximize data transfer in a transmission system with a relatively narrow bandwidth. To do this, different sequences of bits are represented by different optical power levels. This is described on page 1 of the application as filed at line 12 and illustrated in Figure 3. As shown in Figure 3, bit sequence 00 is represented by power level  $P_1$ , bit sequence 01 is represented by power level  $P_2$ , and bit sequence 10 is represented by power level  $P_3$  etc. In this way, in the claimed invention, a binary word such as 1101 can be represented by two optical signals, rather than 4 as would be the case for the system of the '355 Olsen patent.

In short, what the '355 Olsen patent fails to teach or suggests is that throughput can be increased by assigning sequences of bits to different power levels for transmission. In the '355 Olsen patent, it takes four different signals sent sequentially to transmit a four bit data word, while the claimed invention can transmit the data word using two signals, where each signal represents two bits.

Applicant respectfully submits that the '436 Roberts patent does not supply these missing teachings. The '436 Roberts patent refers to wavelength division multiplexed optical transmission. This system is fundamentally different to the multi-power level optical transmission system of the claimed invention. Page 3 line 15 of the Office Action refers to duobinary modulation. This does not imply that different value words are encoded in three different power levels. Duobinary modulation is used in wavelength division multiplexing to emulate a sync function. This is a band limiting process to avoid co-channel interference. This has nothing to do with and no relevance to the concept of encoding different value words (i.e. different bit sequences) into different power levels of a multi-power level optical system. Hence, there is no teaching in the '436 Roberts patent that would lead a skilled person to the claimed invention.

In light of the above, Applicant respectfully submits that independent Claim 1, as well as the claims that depend therefrom, are patentable over the cited references.

### **CONCLUSION**

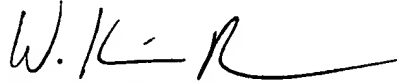
Applicant respectfully submits that the claims as amended overcome the rejection raised by the Examiner and that the claims are patentable. Applicant therefore respectfully requests allowance of the application. It is therefore respectfully requested that a Notice of Allowance be issued. The Examiner is encouraged to contact Applicant's undersigned attorney to resolve any remaining issues in order to expedite examination of the present application.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required

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therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

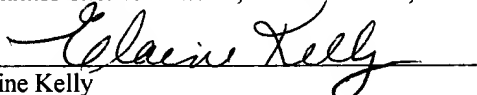


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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on May 12, 2005

  
Elaine Kelly